IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Per Beming, *et al.*	§	Group Art Unit:	2462
Application No.	10/595,312	§	Examiner:	Duong, Christine
Filed:	04/06/2006	§	Confirmation No:	7185

Attorney Docket No: P17894-US1
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For: Coordinated Data Flow Control and Buffer Sharing in UMTS

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APPEAL BRIEF SUBMITTED UNDER 35 U.S.C. §134

This brief is submitted to appeal the decision of the Primary Examiner set forth in the Final Official Action dated October 19, 2009, finally rejecting claims 13-17, and the Advisory Action dated January 12, 2010, maintaining those rejections.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §41.20(b)(2) that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1379.

Real Party in Interest

The real party in interest, by assignment, is: Telefonaktiebolaget LM Ericsson (publ)
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Related Appeals and Interferences

None.

Status of Claims

Claims 1-12 and 18 were previously cancelled and are not appealed; claims 13-17 remain pending in the application. Claims 13 and 14 stand rejected, under 35 U.S.C. §103(a), as being unpatentable over what the Examiner has deemed as Applicant's Admitted Prior Art" ("APA") in view of Calvignac (U.S. Patent No. 5,784,698) and Miyoshi, *et al.* (U.S. Patent Publication No. 2003/0087662 A1); and, claims 15-17 stand rejected, under 35 U.S.C. §103(a), as being unpatentable over APA in view of only Miyoshi.

Status of Amendments

The claims set out in the Claims Appendix include all entered amendments. No amendment has been filed subsequent to the final rejection.

Grounds of Rejection to be Reviewed on Appeal

1.) Whether claims 13 and 14 are unpatentable over what the Examiner has deemed as Applicant's Admitted Prior Art" ("APA") in view of Calvignac (U.S. Patent No. 5,784,698) and Miyoshi, *et al.* (U.S. Patent Publication No. 2003/0087662 A1); and,

2.) Whether claims 15-17 are being unpatentable over APA in view of Miyoshi.

Arguments

1.) Claims 13 and 14 are patentable over Applicant's Admitted Prior Art" ("APA") in view of Calvignac and Miyoshi

Claim 13 recites:

> 13. A control method for regulating the flow of data between a first transmitting radio network node and a second transmitting radio network node in a radio transmission network, comprising the steps of:
>
> said second transmitting radio network node receiving data from said first transmitting radio network node to be forwarded to plural user entities via an air interface; wherein:
>
> the first transmitting radio network node sends a capacity request to the second transmitting radio network node requesting the second

transmitting radio network node for permission to send an indicated number of data units that are pending in the first transmitting radio network node; and,

the second transmitting radio network node, in response to the capacity request, sends an allocation frame to the first transmitting radio network node, said allocation frame indicating the number of data units the first transmitting radio network node is given permission to transmit, this latter number being referred to as credits;

wherein the second transmitting radio network node, if buffer resources for storing of data units at the second transmitting radio network node are limited for each data flow between the first and second transmitting radio network nodes, performs the steps of:

counting the instantaneous number of requested data units in each data flow to obtain a total number of requested data units;

computing the total **number of credits** to be granted in each data flow by subtracting from a target buffer filling level for the total number of data flows the total number of data units currently stored in each of the buffers and the total **number of credits** previously given but not yet received; and,

distributing the total **number of credits proportionally to radio channel qualities indicated by said user entities**. (emphasis added)

As noted in response to the Non-Final Office Action dated April 2, 2009, the control method for regulating the flow of data between first and second transmitting radio network nodes recited in independent claim 13 (as well as independent claims 15 and 16) is characterized, in part, by distributing the total number of transmission credits to be granted to the user entities ***proportionally to the radio channel qualities indicated by the user entities***. For claim 13 (as well as claims 15 and 16), the Examiner acknowledged that Applicant's Admitted Prior Art (APA) and Calvignac ***do not*** disclose distributing a total number of credits (for transmission of data units) proportionally to radio channel qualities indicated by the user entities. (Office Action dated April 2, 2009; Page 10, lines 1-4, and page 12, lines 4-7) To overcome that deficiency in the prior art, the Examiner looks to the teachings of Miyoshi, stating that Miyoshi discloses: "HDDR is a communication method whereby a base station performs scheduling for allocating communication resources to communication terminals by time division, and also sets a transmission rate for each communication terminal according to the downlink channel quality," referring to paragraph [0003] thereof. The Applicants believe the Examiner reads too much into the teachings of Miyoshi. As those skilled in

the art will recognize, setting the transmission rate for each communication terminal according to the downlink channel quality experienced by **each** such terminal does not limit the transmission rate that can be set for **other** terminals; *i.e.*, the transmission rate set for one communication terminal according to HDR does not limit the transmission rate that can be set for another communication terminal. *In contrast*, the control method recited in claim 13 (as well as claims 15 and 16) is directed to managing the limited capacity of a radio network node (*e.g.*, due to limited buffer resources) which are apportioned ***proportionally to radio channel qualities indicated by user entities*** to which data units will be transmitted; *i.e.*, granting more transmission credits to one entity reduces, proportionally, the number that can be granted to another entity.

In the Final Office Action dated October 19, 2009, the Examiner maintained the rejection of claims 13 and 14 as being unpatentable over APA in view of Calvignac and Miyoshi; and, claims 15-17 as being unpatentable over APA in view of Miyoshi. In responding to Applicants' arguments submitted in response to the prior office action, the Examiner stated, exactly as asserted in the prior office action, that:

> "Miyoshi discloses 'HDR is a communication method whereby a base station performs scheduling for allocating communication resources to communication terminals by time division, and also sets a transmission rate for each communication terminal according to the downlink channel quality'."

As noted in Applicants' prior arguments to distinguish that asserted teaching of Miyoshi, the Applicants believe the Examiner reads too much into the teachings thereof. As those skilled in the art will recognize, setting the transmission rate for each communication terminal according to the downlink channel quality experienced by **each** such terminal does not limit the transmission rate that can be set for **other** terminals; *i.e.*, the transmission rate set for one communication terminal according to HDR does not limit the transmission rate that can be set for another communication terminal. In the final office action, the Examiner attacked that distinction by stating that:

> "Based on the DRC signal transmitted from each communication terminal, the base station sets a transmission rate for each communication terminal, and sends a signal to each communication terminal via a control channel indicating communication resource allocation to each communication terminal (Miyoshi [0006]). This shows that data is sent proportionally to channel quality for each terminal. Therefore, Miyoshi discloses distributing the total number of credits

proportionally to radio channel qualities indicated by said user entities." (emphasis added)

Again, the Examiner reads too much into the teachings of Miyoshi. Although Miyoshi describes setting a transmission rate by a base station based on a DRC signal transmitted by different communication terminals, it does not follow that Miyoshi discloses "distributing [a] total number of credits proportionally to radio channel qualities indicated by said user entities;" ***to conclude otherwise is to not read the credit mechanism of Applicants' invention in the context of the claim as a whole***.

As previously noted by the Applicants, the control methods for regulating the flow of data between first and second transmitting radio network nodes recited in independent claim 13 (and claims 15 and 16) is characterized, in part, **by distributing the total number of transmission credits to be granted to the user entities *proportionally to the radio channel qualities indicated by the user entities***. For claim 13 (as well as claims 15 and 16), the Examiner has previously acknowledged that Applicant's Admitted Prior Art (APA) and Calvignac do not disclose distributing a total number of credits (for transmission of data units) proportionally to radio channel qualities indicated by the user entities. As those skilled in the art will recognize, setting the transmission rate for each communication terminal according to the downlink channel quality experienced by **each** such terminal does not limit the transmission rate that can be set for **other** terminals; *i.e.*, the transmission rate set for **one** communication terminal according to HDR does not limit the transmission rate that can be set for **another** communication terminal. *In contrast*, the control method recited in claim 13 (as well as claims 15 and 16) is directed to managing the limited capacity of a radio network node (*e.g.*, due to limited buffer resources) which are apportioned *proportionally to radio channel qualities indicated by user entities* to which data units will be transmitted; *i.e.*, **granting more transmission credits to one entity reduces, proportionally, the number that can be granted to another entity**.

In responding to that technical distinction in the final office action, the Examiner asserted that "the features upon which the applicant relies . . . are not recited in the rejected claim(s)." The Applicants disagree. Claim 13 concludes with the limitation of: "distributing the **total** number of credits **proportionally** to radio channel qualities

indicated by said user entities." (emphasis added). As those skilled in the art will recognize, **if there are a "total" number of credits, and they are distributed "proportionally," then granting more transmission credits to one entity will, *necessarily*, reduce the number that can be granted to another entity**. The Examiner has not pointed to any such teaching in Miyoshi and, accordingly, claim 13 (as well as claims 15 and 16) is not obvious over APA, Calvignac and Miyoshi. Furthermore, whereas claim 14 is dependent from claim 13, and includes the limitations thereof, it is also not obvious in view of APA, Calvignac and Miyoshi.

2.) Claims 15-17 are patentable over APA in view of Miyoshi

Independent claims 15 and 16, as noted *supra*, recite limitations analogous to those of claim 13 and, thus, they are also distinguishable over APA and the teachings of Calvignac and Miyoshi. Therefore, the Examiner has also not established a *prima facie* case of obviousness for claims 15 and 16. Furthermore, whereas claim 17 is dependent from claim 16, and includes the limitations thereof, it is also not obvious.

* * *

CONCLUSION

The claims currently pending in the application are patentable over the cited references and, therefore, the Applicants request that the Examiner's claim rejections be reversed and the application be remanded for further prosecution.

Respectfully submitted,

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CLAIMS APPENDIX

1-12. (Cancelled)

13. (Previously Presented) A control method for regulating the flow of data between a first transmitting radio network node and a second transmitting radio network node in a radio transmission network, comprising the steps of:

said second transmitting radio network node receiving data from said first transmitting radio network node to be forwarded to plural user entities via an air interface; wherein:

the first transmitting radio network node sends a capacity request to the second transmitting radio network node requesting the second transmitting radio network node for permission to send an indicated number of data units that are pending in the first transmitting radio network node; and,

the second transmitting radio network node, in response to the capacity request, sends an allocation frame to the first transmitting radio network node, said allocation frame indicating the number of data units the first transmitting radio network node is given permission to transmit, this latter number being referred to as credits;

wherein the second transmitting radio network node, if buffer resources for storing of data units at the second transmitting radio network node are limited for each data flow between the first and second transmitting radio network nodes, performs the steps of:

counting the instantaneous number of requested data units in each data flow to obtain a total number of requested data units;

computing the total number of credits to be granted in each data flow by subtracting from a target buffer filling level for the total number of data flows the total number of data units currently stored in each of the buffers and the total number of credits previously given but not yet received; and,

distributing the total number of credits proportionally to radio channel qualities indicated by said user entities.

14. (Previously Presented) The control method recited in claim 13, further comprising the step of limiting the total sum of user data in all data streams to a desired value less than or equal to the total requested number of data units.

15. (Previously Presented) A control method for regulating the flow of data between a first transmitting radio network node and a second transmitting radio network node in a radio transmission network, comprising the steps of:

said second transmitting radio network node receiving data from said first transmitting radio network node to be forwarded to plural user entities via an air interface, wherein:

the first transmitting radio network node sends a capacity request to the second transmitting radio network node requesting the second transmitting radio network node for permission to send an indicated number of data units that are pending in the first transmitting radio network node; and,

the second transmitting radio network node, in response to the capacity request, sends an allocation frame to the first transmitting radio network node, said allocation frame indicating the number of data units the first transmitting radio network node is given permission to transmit, this latter number being referred to as credits; and,

distributing the number of credits given by the second transmitting radio network node proportionally to radio channel qualities indicated by said user entities to which the second transmitting radio network node is scheduling radio transmission of data units.

16. (Previously Presented) A radio network node for regulating the flow of data from a transmitting node, comprising:

a buffering resource;

a capacity allocation device for allocating individual amounts of user data to individual user entities;

a flow control protocol and a scheduler;

wherein the capacity allocation device comprises a counter for keeping a running count of the instantaneous number of outstanding credits, outstanding credits being

defined as the number of data units that the allocation device has permitted the transmitting node to send, although the corresponding number of data units has not yet arrived at the radio network node;

a distribution device adapted to distribute the total number of credits given by the radio network node proportionally to radio channel qualities indicated by said user entities to which the scheduler is scheduling radio transmission of data units.

17. (Previously Presented) The radio network node recited in claim 16, wherein the capacity allocation device comprises a counter for keeping a running count of user data pending in the transmitting node.

18. (Cancelled)

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EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.